

Professor C V Howard

Curriculum Vitae

## **CURRICULUM VITAE**

### **PERSONAL DETAILS**

**Name:** Professor Charles Vyvyan HOWARD

**Address:** Centre for Molecular Biosciences  
University of Ulster  
Cromore Road  
Coleraine, BT52 1SA

**Date/Place of Birth:** 22nd May 1946, Blackpool, UK

**Nationality:** British

### **RESEARCH METRICES**

Google Scholar 21/06/2019: Publications 140; citations 8662; h-index 38; i10-index 86

### **FURTHER/HIGHER EDUCATION**

**Education:** 1965-70 University of Liverpool: Faculty of Medicine. MB ChB

**Qualifications:** 1970 MB ChB, Liverpool  
1971 Full General Medical Council Registration  
1983 Ph D, Liverpool in developmental neurobiology  
1995 MRCPATH  
1999 FRCPATH

### **WORK EXPERIENCE**

1970 - 1971	House Officer, Sefton General Hospital, Liverpool
1971 - 1975	Demonstrator in Anatomy, University of Liverpool
1975 - 1991	Lecturer in Anatomy, University of Liverpool
1991 - 2005	Senior Lecturer in Anatomy, University of Liverpool
2005 - 2014	Professor of Bioimaging, University of Ulster
2014-	Emeritus Professor of Bioimaging, University of Ulster

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## **MEMBERSHIP OF PROFESSIONAL BODIES**

- Fellow: - Royal College of Pathologists
- Royal Microscopical Society
- Collegium Ramazzini
- Member: - British Society of Toxicological Pathologists

## **POSITIONS HELD ON PROFESSIONAL BODIES**

1985-1992 General Editor, Journal of Microscopy  
1991-1995 President International Society for Stereology  
1996-1998 President Royal Microscopical Society  
2003-2009 Member DEFRA Advisory Committee on Pesticides  
2004-2006 Founding Editor of the journal 'Nanotoxicology'  
2007-2009 President International Society of Doctors for the Environment

## **RESEARCH INTERESTS**

Vyvyan Howard is a medically qualified pathologist with interests in low dose minimal change toxicology, particularly of the fetus and neonate. He has worked for many years in the field of developmental neurotoxicology, including the actions of pharmaceutical agents, pesticides and environmental pollutants. He is an expert on the quantification of toxicological change with the use of stereology. He has a long founded interest and expertise in imaging living processes through the use of microscopy. Recently he has held major grants for investigating the toxicology of nano-particles in biological systems. He has experience in regulatory toxicology, having served 6 years on the Advisory Committee on Pesticides in the UK. He has recently been appointed an expert in toxicology by the National Standards Authority of Ireland (NSAI) as a Member of the CEN/TC 436 Technical Committee addressing cabin air quality in commercial aircraft.

## **RESEARCH FUNDING WHILE AT University of Ulster**

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- 2006 – 2008 £250,000 STREP project ‘Nanointeract’ under EU Framework 6. Part of a € 3.3 million multicentre study on the fate and toxicity of engineered nanoparticles
- 2008 -2011 Organix Foundation £120,000 to investigate the effect of low dose exposure to hormone disrupting pesticides on fetal development
- 2008 – 2011 €420,000 EU FP7 grant NeuroNano to investigate the effect of nano-particles on the progression of Alzheimer’s disease in a mouse model.
- 2010-2013 NC3R/MRC £360,000 to develop a 3D tissue model of human breast tissue for the testing of xenoestrogens.

#### **Honours:**

- 1989 - Awarded Royal Microscopical Society 150th Anniversary Gold Medal for services to microscopy.
- 1999 - Overall Winner, Caroline Walker Trust 11<sup>th</sup> Annual Awards for improving public health through food.

### **PUBLICATIONS**

- [1] Howard C.V., Scales L.E., & Lynch R. (1980).  
 'The numerical densities of alpha and gamma motoneurons in the trigeminal motor nucleus of the rat: A method of determining the separate numerical densities of two populations of anatomically similar cells.' *Mikroskopie (Wien)*, **37** (Suppl.), 220-236
- [2] Howard C.V. (1981).  
 'Experimental and theoretical evaluation of size distributions'. *Stereol.Iugosl.*, **3**/Supplement 1, 79-88
- [3] Howard C.V. (1981).  
 'On the functional significance of the third moment of size distribution in biological systems.' *Stereol.Iugosl.*, **3**/Supplement 1, 503-510
- [4] Maina J.N, Howard C.V. & Scales L.E. (1981).  
 'The determination of the length densities and size distributions of blood and air capillaries in the avian lung involving a log normal fitting procedure.' *Stereol.Iugosl.*, **3**/Supplement 1, 673-678
- [5] Howard C.V., Lynch R., & Scales L. (1981).  
 'The numerical densities of alpha and gamma motoneurons in lamina IX of the cervical cord of the rat: a method of determining the separate numerical densities of two mixed

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- populations of anatomically similar cells.' (1981). Eleventh International Congress of Anatomy: Advances in the Morphology of Cells and Tissues, 173-183. E.A. Vidrio & M. A. Galina (Eds.). Alan R. Liss, N.Y.
- [6] Howard C.V. (1981).  
'The separate numerical densities of alpha and gamma motor- neurones in the spinal cord of the rat.' (1981). *Sterol. Iugosl* **3**/suppl 1: 503-510.
- [7] Howard C.V., & Scales L. (1982).  
'The concept of 'Neuromorphotaxis' based on a minimisation principle. A case for the critical analysis of biological variation.'. *Acta Stereol.***1**: 241-252.
- [8] Lynch R. & Howard C.V. (1982).  
'The use of horseradish peroxidase (HRP) in the stereological analysis of motor nuclei.'  
*Acta Stereol.* **1**: 253-258
- [9] Howard C.V. (1983)  
PhD THESIS: 'Neuromicrosis: a process affecting the phylo- and ontogenetic development of the brain. An hypothesis based on stereological studies of neurone population characteristics.' The University of Liverpool. 1983.
- [10] Scales L.E. & Howard C.V. (1983).  
'Some empirical functions for use in the parametric modelling of stereological size distributions.' (1983). *Acta Stereol*, **2**: 187-192
- [11] Howard C.V., Scales L.E. & Allibone R. (1983)  
'The relationship between Purkinje cell diameter and position within the cerebellar folia of the rat: a stereological analysis.' (1983). *Acta Stereol.***2**:219-222
- [12] Howard C.V., & Eins S. (1984).  
'Software solutions to problems in stereology.' (1984). *Acta Stereol*, **3**: 139-158
- [13] Howard C.V., Lynch R. & Woodhams P. (1985)  
'Population characteristics of nerve cell bodies illustrated by the postnatal development of cerebellar granule cells in the rat.'. Quantitative Neuroanatomy in Transmitter Research. Eds. Agnati L.F. and Fuxe K. Macmillan, London. pp 41-54
- [14] Howard C.V., Reid S., Baddeley A. & Boyde A (1985).  
'Unbiased estimation of particle density in the Tandem Scanning Reflected Light Microscope.' (1985). *J. Microsc.* **138**, 203- 212
- [15] Howard C.V. (1986).  
'Rapid nuclear volume estimation in malignant melanoma using point-ampled intercepts in vertical sections.'. In: Quantitative Image Analysis in Cancer Cytology

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'Stereological probes using 'optical sections' in scanning light microscopy.'. In: Science on Form. Eds. S. Ishizaka, Y. Kato, R. Takaki and J. Toriwaki. KTK Scientific Publishers, Tokyo. pp 137-146
- [17] Baddeley A., Howard C.V., Boyde A. & Reid S. (1987).  
'Three-dimensional analysis of the spatial distribution of the particle, using Tandem Scanning Reflected Light Microscopy.' (1987). *Acta Stereol*, **6**: 87-100
- [18] Howard C.V. (1988).  
'Unbiased measurements in electron microscopy.'. *Inst. Phys. Conf. Ser.* **93**, 49-57.
- [19] Evans S.M. & Howard C.V. (1989).  
'A simplification of the step method for measuring mean section thickness.'. *J. Microscopy*. **154**: 289-293
- [20] Moss M.C., Browne M.A., Howard C.V. & Joyner D.(1989).  
'An interactive image analysis system for measuring mean particle volume.'. *J. Microscopy*. **156**: 79-90
- [21] Braendgaard H., Evans S.M., Howard C.V. & Gundersen H.J.G.(1990).  
'The total numbers of neurons in human neocortex unbiasedly estimated using optical disectors.'. *J. Microscopy*. **157**: 285-304
- [22] Howard C.V., Rassoli M.B. & McKerr G. (1990).  
'Correlating structure with function in developmental neurology using stereological and confocal microscopical techniques.'. Science on Form. Ed. S. Ishizaka. KTK Scientific Publishers, Tokyo. pp 31-37.
- [23] Cogswell C.J., Sheppard C.J., Moss M.C. & Howard C.V. (1990).  
'A method for evaluating microscope objectives to optimize performance for confocal systems.'. *J. Microsc.* **158**: 177-185.
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'Improvements of 3D confocal microscope images by geostatistical filters.'. *Trans Roy Mic Soc.* **1**: 281-284.
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'The use of basic morphological operations for 3D biological image analysis.'. *Trans Roy Mic Soc* **1**: 293-296.

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'Digital stereology - a comparative study of digital stereological surface density estimators.'. *Trans Roy Mic Soc* **1**: 315-319.
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'Effect of propyl thiouracil (PTU) treatment during prenatal and early postnatal development on the neocortex of rat pups.'. *Neuroendocrinology* **53**(4): 321-327.
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'An assessment of volume-weighted mean nuclear volume estimates as a prognostic index for neuroblastoma.' *Pediatric Pathology* **10**: 973-986.
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'Human Intrauterine Renal Growth expressed in absolute number of glomeruli assessed by the 'Disector' method and Cavalieri principle.'. *Lab Invest* **64**: 777-784.
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'Estimating the length of a bounded curve in 3D using total vertical projections.' *J. Microsc.* **163**: 101-114.
- [31] Zhao H.Q., Browne M.A. & Howard C.V.(1991).  
'Digital probes for three dimensional microstructural analysis.'. *Machine Vision and Application* **4**: 255-261.
- [32] Roberts N., Howard C.V., Cruz-Orive L.M. & Edwards R.H.T. (1991).  
'The application of the total vertical projections for the unbiased estimation of the length of blood vessels and other structures by magnetic resonance imaging.' *Magnetic Resonance Imaging* **9**: 917-925.
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'Measuring the surface area of a cell by the method of spatial grid with a CSLM - A demonstration.' *J. Microsc.* **165**: 183-188
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'Medullary Ray Glomerular Counting as a method of assessment of human nephrogenesis.'. *Pathology Research and Practice* **188**: 775-782.
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'The effect of human intrauterine growth retardation on the development of renal nephrons.' *British Journal of Obstetrics and Gynaecology* **99**: 296-301.
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'Geostatistical and morphological methods applied to three-dimensional microscopy.'. *J. Microsc.* **166**: 169-185.
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'Confocal microscopy of dental plaque development.'. *Binary Comput Microbiol* **4**(3): 86-92.
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'Automatic 3-D disector sampling for volume distribution measurements.'. *Acta Stereol* **11**: 215-220.
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'Segmentation of human hand X-ray images for bone age analysis.'. *Acta Stereol* **11**: 747-752.
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'Renal developmental arrest in sudden infant death syndrome.'. *Paediatric Pathology* **13**: 333-343.
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'Analysis of a three dimensional point pattern with replication.'. *Appl. Statist.* **42**: 641-668.
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'Stereological estimation of the total number of neurons in the asexually dividing tetrahyridium of *Mesocetoides corti*.'. *Parasitology*, **106**: 177-183.
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'Automated image analysis of silver stainable nucleolar organising regions in childhood acute lymphoblastic leukaemia.'. *Cancer Therapy and Control* **4** Suppl.4: 331-337.
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'Analysis of relative proliferation rates of Wilms tumour components using PCNA and MIB-equivalent antigen immunostaining and assessment of mitotic index.' *Laboratory Investigation* **70**: 125-129.
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'PCNA/Ki-7 dissociation in childhood lymphoblastic leukaemia.' *Cell Biology International*, **18**: 869-874.
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'Relationship between MDR- gene expression and Ag-NOR pattern in childhood lymphoblastic leukaemia.'. *Cancer Therapy and Control*, **4**: 3-9.
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'Immunocytochemical study of vascular barrier antigen in the developing rat brain.' *J Comp Path.* **111**: 43-53.
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'3-D Unbiased stereological measurements using conventional light microscopy, applied to the study of human intra-uterine growth retardation.'. *Zoological Studies* **34**: 109-110
- [59] Cruz-Orive L.M. & Howard C.V. (1995).  
'Estimation of individual feature surface area with the vertical spatial grid.' *J. Microscopy* **178**: 146-151.
- [60] Hooper P., Smythe E., Richards R.C., Howard C.V., Lynch R.V. & Lewis-Jones D.I. (1995).  
'Total number of immunocompetent cells in the normal rat epididymis and after vasectomy.' *Journal of Reproduction and Fertility* **104**: 193-198.
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'A stereological assessment of IUGR in relation to the brain, the phrenic nerve, and kidneys and the lungs.'. *European Journal of Morphology*. **33** (4): 294-298
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'Dioxin contamination of workers' blood and wastes at a chlorophenol manufacturing site in the UK.'. *Organohalogen Compounds* **26**: 97-100.
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'Reduction of serum testosterone concentration and perturbation of serum immunoglobulin M and G3 concentrations in a group of dioxin exposed workers.' *Organohalogen Compounds* **25**: 85-86.
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'Comparative pathology of dome and trigone of urinary-bladder mucosa in paraplegics and tetraplegics.' *Paraplegia*, **33**: 565-572
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'Maternal smoking and blood-pressure in 7.5 to 8 year old offspring.' *Archives of Disease in Childhood*, **73**: 378.
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'Nerve fibres in urothelium and submucosa of neuropathic urinary bladder: an immunohistochemical study with S-100 and neurofilament.' *Paraplegia*, **34**:137-151.
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'Stereological estimation of the absolute number of glomeruli in the kidneys of the lamb.' *Research in Veterinary Science*, **60**:122-125.
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'A quantitative immunocytochemical analysis of total surface area of blood-brain barrier in developing rat brain.' *Comparative Haematology International*, **6** 214-220.

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'Gene Technology and Gene Ecology of Infectious Diseases.' *Microbial Ecology in Health and Disease* **10**: 33-59
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'Characterisation of Ocular Cellular and Extracellular Structures Using Confocal Microscopy and Computerised Three-Dimensional Reconstruction.' *Confocal Microscopy,, Methods in Enzymology*, **307**: 496-513.
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